REMARKS

Claims 1-49 are pending and are rejected, of which claims 1, 13, 25 and 35 are in independent form. The applicant amended claims 1, 13, 25, 34-35 and 45, has cancelled claims 44 and 46, and has added new claims 50-51. After entry of this amendment, claims 1-43, 45, and 47-51 should be pending. The applicant respectfully requests reconsideration in view of the amendment and remarks.

I. Information Disclosure Statement

An Information Disclosure Statement (IDS) was filed June 4, 2008, and is shown as received by the USPTO in PAIR. The Examiner did not acknowledge receipt of the IDS.

II. Section 112 Rejections

Claims 1-34 are rejected as allegedly indefinite.

The Examiner rejected claim 1 on the basis that since the retaining ring is recited to be part of the carrier head it is unclear how it may be removed without disassembly of the carrier head. Amended claim 1 now recites that "the retaining ring is removable from the base ... without disassembly of the base" to respond to the Examiner's concerns.

The Examiner rejected claim 13 on the basis that it was unclear whether the limitation of removable as a unit referred to the upper portion or lower portion. Amended claim 13 now recites that "the retaining ring is removable as a unit from the base so that the upper portion remains secured to the lower portion while the retaining ring is removed" to respond to the Examiner's concerns.

The Examiner also rejected claims 13 and 25 on the basis that it was unclear whether any physical limitations were indicated. Applicant disagrees. There are at least some physical configurations not covered by the claims. For example, where the mechanism that secures the retaining ring to the base is hidden between the upper portion and lower portion when the upper and lower portions are secured, the lower portion must be removed to access the mechanism, and thus the retaining ring cannot be removed as a unit. Nevertheless, claims 13 and 25 have been

amended to state that "the upper portion remains secured to the lower portion while the retaining ring is removed" to distinguish from mere simultaneous removal of the portions.

III. Section 102 Rejections

Claims 1-3, 5, 8-9, 12-15, 17, 20-21, 24, 31-32, 34-37, 39, 42-43, 46-47 and 49 stand rejected as allegedly anticipated by EP 0747167 A2 to Shendon et al. ("Shendon"). Claims 4, 6-7, 10-11, 16, 18-19, 22-23, 25-30, 38, 40-41 and 44-45 stand rejected as allegedly obvious over Shendon, without a secondary reference. The applicant respectfully traverses the rejection.

A. Claims 1-51

The Examiner associates Shendon's retaining ring assembly 148 with the claimed "retaining ring". Applicant does not admit that this is a proper association. Applicant submits that a person of ordinary skill in the art would consider only the wafer perimeter retaining ring 162, not the retaining ring assembly 146, to constitute a retaining ring. In particular, a person of ordinary skill in CMP understands the term "retaining ring" to refer to a part that is easily detachable from the rest of the carrier so that it can be replaced once worn. In Shendon, it is the wafer perimeter ring 162 that is configured to be detached and replaced. In addition, the Examiner's attention is directed to Shendon's own terminology; element 162 is identified as the retaining ring.

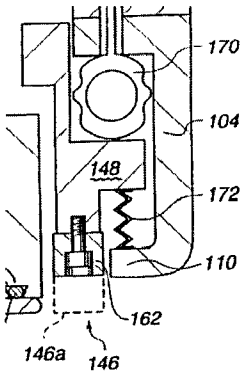
Shendon's wafer perimeter ring 162 is only a single piece, rather than an upper portion made of metal and a lower portion made of plastic.

Therefore, Applicant submits that claims 1-51 are patentable over Shendon.

B. Claims 1-12

Claim 1 recites that the top surface of the upper portion of the retaining ring is "fixed to and abutting the base such that the retaining ring is vertically fixed relative to the base."

Shendon fails to teach a retaining ring that is vertically fixed relative to the base. Rather, as shown in Figure 4, Shendon's retaining ring assembly 146 is free to move vertically relative to the housing support plate 102 and the descending wall 104. This permits the pressure of the ring assembly 146 on the polishing pad to be adjusted.



Shendon would not be modified so that the retaining ring assembly 146 were vertically fixed relative to the housing support plate 102 or descending wall 104, because under such a configuration the pressure of the wafer perimeter ring 162 would not be adjustable (see column 4, lines 27-40). Thus, Shendon teaches away from a retaining ring vertically fixed relative to the base.

In addition to the reasons for patentability over Shendon as set forth above, Shendon also fails to teach a carrier head in which the retaining ring is removable without disassembly of a base. In Shendon, the backing ring 148 is trapped between the housing support plate 102 and the descending wall 104. In order for the ring assembly 146 to be removed, the descending wall 104 would need to be disassembled from the support plate 102.

Therefore, Applicant submits that claim 1, and the claims depending therefrom, are patentable over Shendon.

C. Claims 25-30

Claim 25 requires a generally annular lower portion made of a first material that has a durometer measurement between about 80 and 95 on the Shore D scale and a thickness between 100 and 400 mils.

In addition to the reasons for patentability over Shendon as set forth above, Shendon also fails to teach a lower portion of a retaining ring with a thickness between 100 and 400 mils.

The Examiner argues that the dimensions of the lower portion would have been selected for the substrate to be polished without deforming the flexible ring during a polishing process. However, Shendon fails to teach that preventing deformation of the retaining ring is desirable.

In addition, the Examiner relies on *In re Gardner v. TEC Systems, Inc.* for the proposition that where the claimed relative dimension would not perform differently than the dimensions in the prior art device, the claimed device is not patentably distinct. However, the claimed range does operate differently than other ranges. In particular, by making the lower portion with a thickness between 100 and 400 mils, the rigidity from the upper portion dominates when the retaining ring is secured to the carrier head, thus reducing or eliminating the need for "break-in."

The Examiner has argued that "similar relative proportions are illustrated by Shendon". First, drawings are not to be relied upon for showing scale. *See* MPEP 2125 (when the reference does not disclose that the drawings are to scale and is silent as to dimensions, arguments based on measurements of the drawing features are of little value). Second, and more fundamentally, whether the rigidity of the upper portion dominates for purpose of the retaining ring-pad interaction is not determined by relative proportions but by actual thickness of the lower portion. That is, for a thick lower portion, the rigidity and thickness of the upper portion becomes irrelevant for the retaining-ring pad interaction.

For this additional reason, claim 25, and the claims depending therefrom, are patentable over Shendon.

D. Claims 35-43, 45, 47-49 and 51

Independent claim 35 recites that the lower portion is adhesively attached to the upper portion.

Shendon teaches away from using an adhesive to attach the wafer perimeter retaining ring 162 to the backing ring 148. If the retaining ring 162 were adhesively attached to the backing ring 148, once the retaining ring 162 wears away, the entire retaining ring assembly 146 would need to be replaced, rather than just the retaining ring 162. A person of ordinary skill would be motivated to avoid this needless expense.

The Examiner argues that epoxy adhesive is a well-known expedient in the art of bonding plastic to metals, and that that it would have been obvious to use an epoxy as an alternative to screw attachment. Applicant disagrees.

While the use of epoxies may be generally known to bond the plastic and metal, there are potential drawbacks to using an epoxy in a retaining ring. In particular, in operation, the

retaining ring is subjected to significant lateral shear forces from the polishing pad. Applicant submits that a person of ordinary skill would be directed away from using epoxy due to the danger of failure of the epoxy as compared to a screw attachment.

The Examiner argues that light pressures are used in polishing. The Examiner should provide evidence that light pressures were used at the time of invention. In addition, the Examiner is confusing pressures applied to the substrate with pressures applied to the retaining ring. The retaining ring needs to be pressed against the polishing pad with sufficient load to prevent the frictional force on the substrate from causing the substrate to slip under the retaining ring. Thus, the pressure applied to the retaining ring is higher than the pressure applied to the substrate.

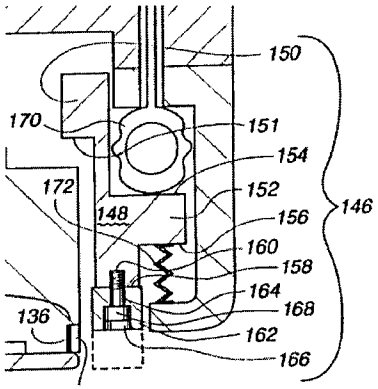
Therefore, in addition to the reasons for patentability over Shendon as set forth above, claims 10, 22 and 44 are patentable over Shendon.

E. Claims 34 and 49

Claims 34 and 49 require that the inner side wall and outer side wall be oriented vertically from the top surface of the upper portion to the bottom surface of the lower portion.

In addition to the reasons for patentability over Shendon as set forth above, Shendon also fails to teach a retaining ring in which the inner side wall and outer side wall are oriented vertically from the top surface of the upper portion to the bottom surface of the lower portion.

In Shendon, the backing ring 148 includes both an outside flange 152 that extends over the compression spring 172 and an inside flange 150 that extends over the wafer backing member 124, as shown in Figure 5:



The horizontal portions of the backing ring 148 can not be considered to be oriented vertically.

Therefore, in addition to the reasons for patentability over Shendon as set forth above, claims 34 and 49 are patentable over Shendon.

F. Claims 50 and 51

New claims 50 and 51 require that the top surface of the upper portion includes a hole to receive a fastener to mechanically affix the retaining ring to the base.

Shendon would not be modified to include a hole to receive a fastener. As discussed above, Shendon's retaining ring assembly 146 is free to move vertically relative to the housing support plate 102 and the descending wall 104. Since Shendon teaches away from a retaining ring vertically fixed relative to the base, Shendon also teaches away from modifying the backing ring to have a hole receive a fastener to mechanically affix the retaining ring to the base.

A petition for an extension of time under 37 C.F.R. § 1.136 is hereby made.

The fees in the amount $1,730 for the extension of time are being paid on the Electronic Filing System (EFS) by way of Deposit Account authorization.

Respectfully submitted,

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